



163334

**Garcia, Jorge Y**

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**From:** Smith, Steven D  
**Sent:** Monday, March 08, 2004 5:38 PM  
**To:** Nabil Fayoumi (fayoumi.nabil@epa.gov); Ken Bardo (bardo.kenneth@epa.gov); Sandra Bron (Sandra.Bron@epa.state.il.us); Peter Barrett (pbarrett@CH2M.com)  
**Cc:** Williams, Richard S; Yare, Bruce S; Garcia, Jorge Y  
**Subject:** FW: WGK - Groundwater Migration Control Tech Memo

Nabil;

Attached are the Tech Memo, Data Table and Figures demonstrating that the Sauget Area 2 Groundwater Migration Control System maintained a hydraulic trough upgradient of the Mississippi River along the entire length of Sauget Area 2 Site R when surface water levels were falling and rising in February 2004. This is the hydraulic control information we promised to send during our last call.

We plan to switch back to the ROD approved look-up tables for determining pumping rates during the wall construction. Also we plan to continue monitoring groundwater levels during March 2004. We can discuss further on our call tomorrow.

Steve



GW Control Tech  
Memo.doc (46 K...



trough.xls (23 KB)



Solutia final figs  
3-8-04.zip ...



**DATE:** March 8, 2004

**cc:** Richard Williams/ R.S Williams  
Steve Smith / Solutia

**SUBJECT:** Sauget Area 2 GMCS  
Groundwater Control

**TO:** Bruce Yare

Groundwater level data were collected from piezometers and monitoring wells at the Sauget Area 2 Site R Groundwater Migration Control System (GMCS) between February 12 and 26, 2004 to assess whether or not groundwater downgradient of Sauget Area 2 Site R was controlled by the GMCS. Groundwater level measurements were automatically recorded in four piezometer pairs (PZ-1E/W, PZ-2E/W, PZ-3E/W and PZ-4E/W) and three pumping wells (EW-1, EW-2 and EW-3) as part of normal GMCS operation. Manual groundwater-level measurements were made on February 12, 16, 17, 19, 20, 23, 24, 25 and 26, 2004 in six monitoring wells (B-21B, B-25B, B-26B, B-28B, B-29B, and GM-27B) screened in the Middle Hydrogeologic Unit. Surface water levels from a river stage gage at the ABRTF diffuser were also automatically recorded. Piezometer and monitoring well locations are shown on Figure 1, and groundwater and surface water level data are presented in Table 1.

These data were used to generate a groundwater and surface water level elevation map for February 12, 16, 17, 19, 20, 23, 24, 25 and 26, 2004 (Figures 2 through 10). Each daily groundwater and surface water elevation map was evaluated to determine whether or not pumping from the GMCS created a hydraulic trough (groundwater low) upgradient of the Mississippi River along the full length of Sauget Area 2 Site R. If the GMCS maintained such a hydraulic trough, groundwater discharging to the Mississippi River downgradient of Site R would be controlled.

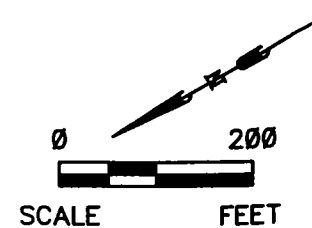
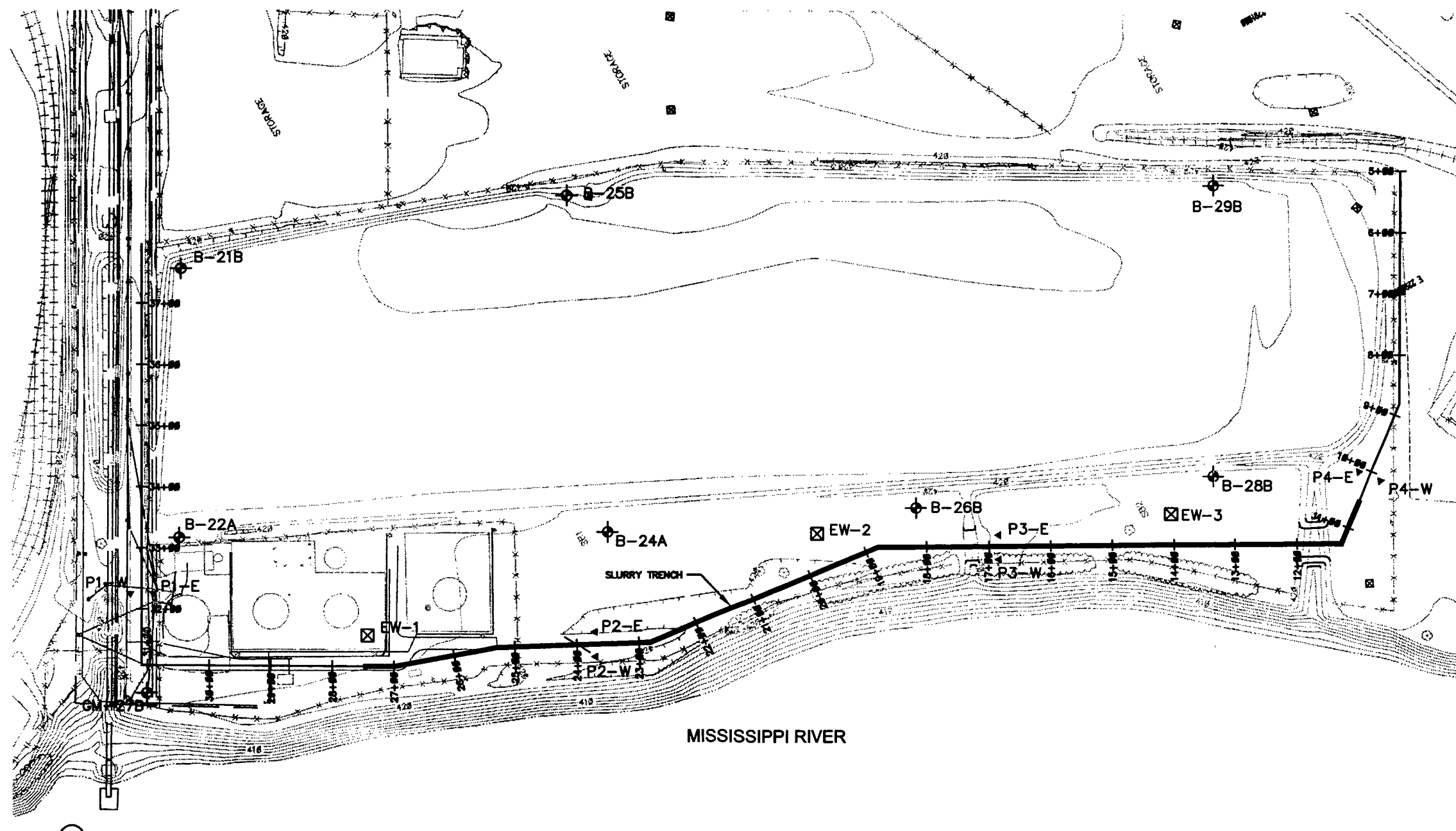
As shown on Figures 2 through 10, a hydraulic trough, centered on GMCS pumping wells EW-1, -2 and -3 and extending the entire length of Site R, was present upgradient of the Mississippi River. This trough was maintained during periods of falling surface water levels (February 12 to 20) and rising surface water levels (February 21 to 26). The presence of a hydraulic trough upgradient of the Mississippi River indicates that groundwater migrating downgradient of Site R was under control.


**Table 1**  
**Groundwater and River Stage Elevation**  
**at the Sauget Area 2 Site-R**  
**Sauget, Illinois**

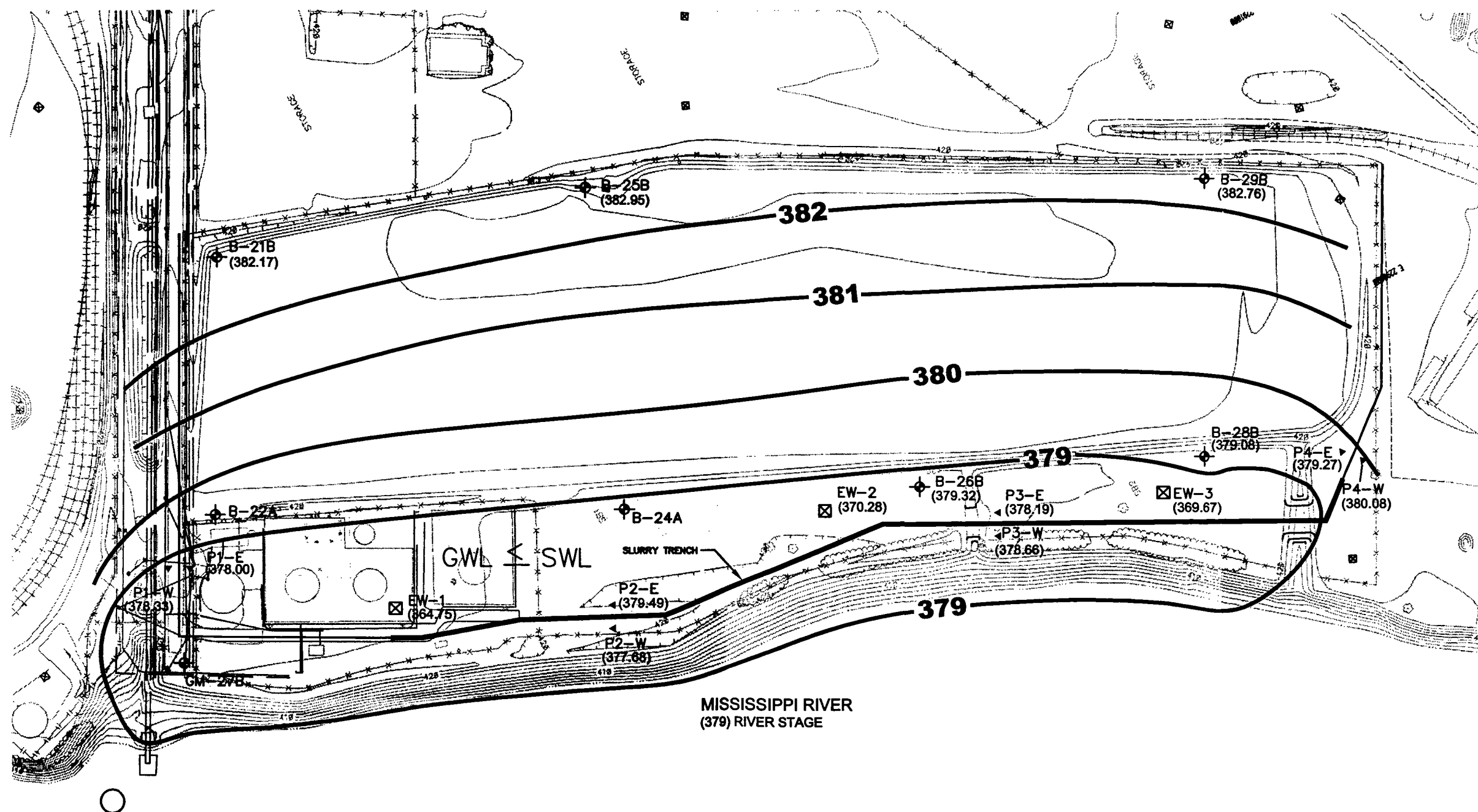
Date	PZ-1E	PZ-2E	PZ-3E	PZ-4E	PZ-1W	PZ-2W	PZ-3W	PZ-4W	B-21B	B-25B	B-26B	B-29B	B-28B	GM-27B	EW1	EW2	EW3	RS
12-Feb-04	378.00	379.49	378.19	379.27	378.33	377.68	378.66	380.08	382.87	382.95	379.32	382.76	379.08	na	364.75	370.28	369.67	379.00
16-Feb-04	377.94	379.24	378.02	379.17	378.26	377.70	378.68	380.01	382.67	382.75	379.12	382.66	378.98	na	365.02	375.08	369.70	378.96
17-Feb-04	377.73	379.05	377.88	378.99	378.05	377.35	378.38	379.81	382.77	382.65	379.12	382.56	378.78	na	364.75	374.84	369.59	378.39
19-Feb-04	377.73	379.18	378.15	379.14	378.06	377.33	378.46	379.95	382.67	382.75	379.22	382.76	379.28	na	365.08	374.86	369.51	378.24
20-Feb-04	377.63	378.96	377.85	378.93	377.90	377.31	378.38	379.78	382.67	382.55	379.12	382.66	379.18	na	364.86	374.48	368.75	378.80
23-Feb-04	379.16	379.58	378.46	380.14	379.18	379.93	380.68	380.66	382.87	382.55	379.22	382.66	379.58	382.04	366.23	374.76	370.18	383.36
24-Feb-04	379.76	379.96	378.76	380.58	379.53	380.75	381.09	380.50	382.97	382.65	379.32	382.66	379.68	382.84	366.83	374.91	370.74	384.93
25-Feb-04	379.80	380.08	378.91	380.67	379.58	380.62	380.93	380.58	383.37	382.85	379.52	383.06	379.98	382.44	366.85	375.09	370.91	384.50
26-Feb-04	380.45	380.31	379.15	381.14	380.18	381.93	382.16	381.13	383.47	382.85	379.62	383.16	380.28	383.54	367.47	375.27	371.15	386.53

Note: Groundwater data from monitoring wells with "B" and "GM" designation were collected manually, daily.  
Remaining data were automated collected, data is presented as average daily data.

RS = River Stage  
na = not available



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		Site Layout	FIG. NO. 1



**LEGEND**

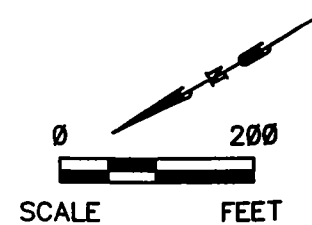
**—379—** GROUNDWATER CONTOUR LINE (1FT INTERVAL)  
 (379) GROUNDWATER ELEVATION

**—** COMPLETED SLURRY TRENCH

**—** TRENCH WALL ALIGNMENT

**—** HYDRAULIC TROUGH

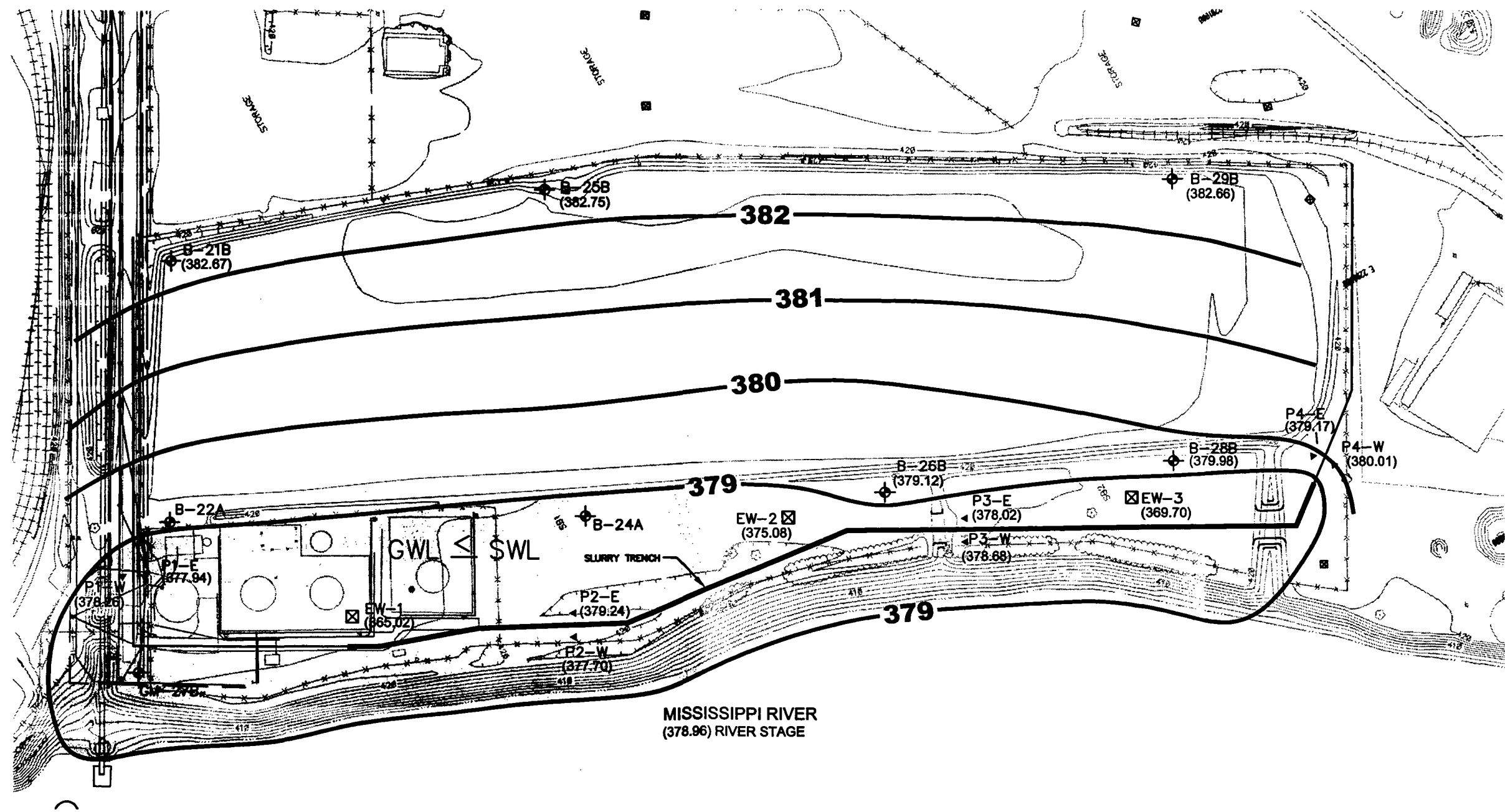
GWL ≤ SWL    GWL = GROUNDWATER LEVEL, SWL = SURFACE WATER LEVEL



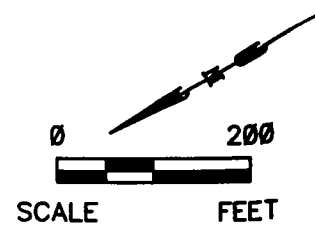
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GROUNDWATER MIGRATION CONTROL SYSTEM SITE-R SAUGET, ILLINOIS	PROJECT NO.
Groundwater Elevation February 12, 2004	FIG. NO. 2

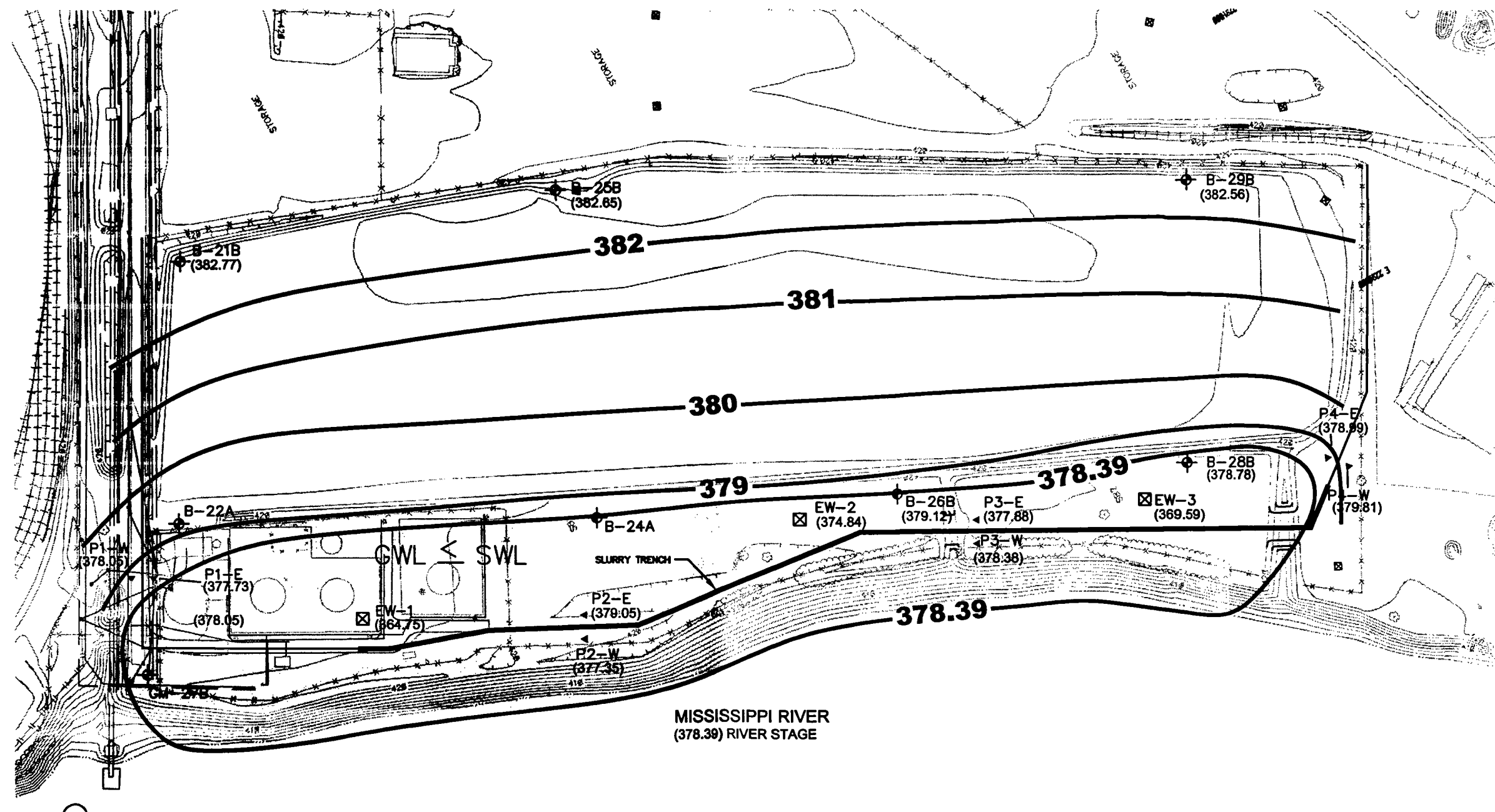


**LEGEND**  
**-379-** GROUNDWATER CONTOUR LINE (1FT INTERVAL)  
 (379) GROUNDWATER ELEVATION  
 — COMPLETED SLURRY TRENCH  
 — TRENCH WALL ALIGNMENT  
 — HYDRAULIC TROUGH  
 GWL ≤ SWL GWL = GROUNDWATER LEVEL, SWL = SURFACE WATER LEVEL



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GROUNDWATER MIGRATION CONTROL SYSTEM SITE-R SAUGET, ILLINOIS	PROJECT NO.
Groundwater Elevation February 16, 2004	FIG. NO. 3



**LEGEND**

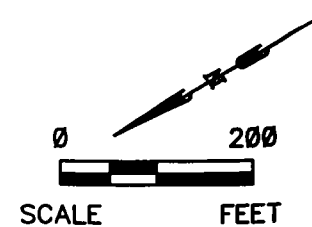
—379— GROUNDWATER CONTOUR LINE (1FT INTERVAL)  
(379) GROUNDWATER ELEVATION


— COMPLETED SLURRY TRENCH

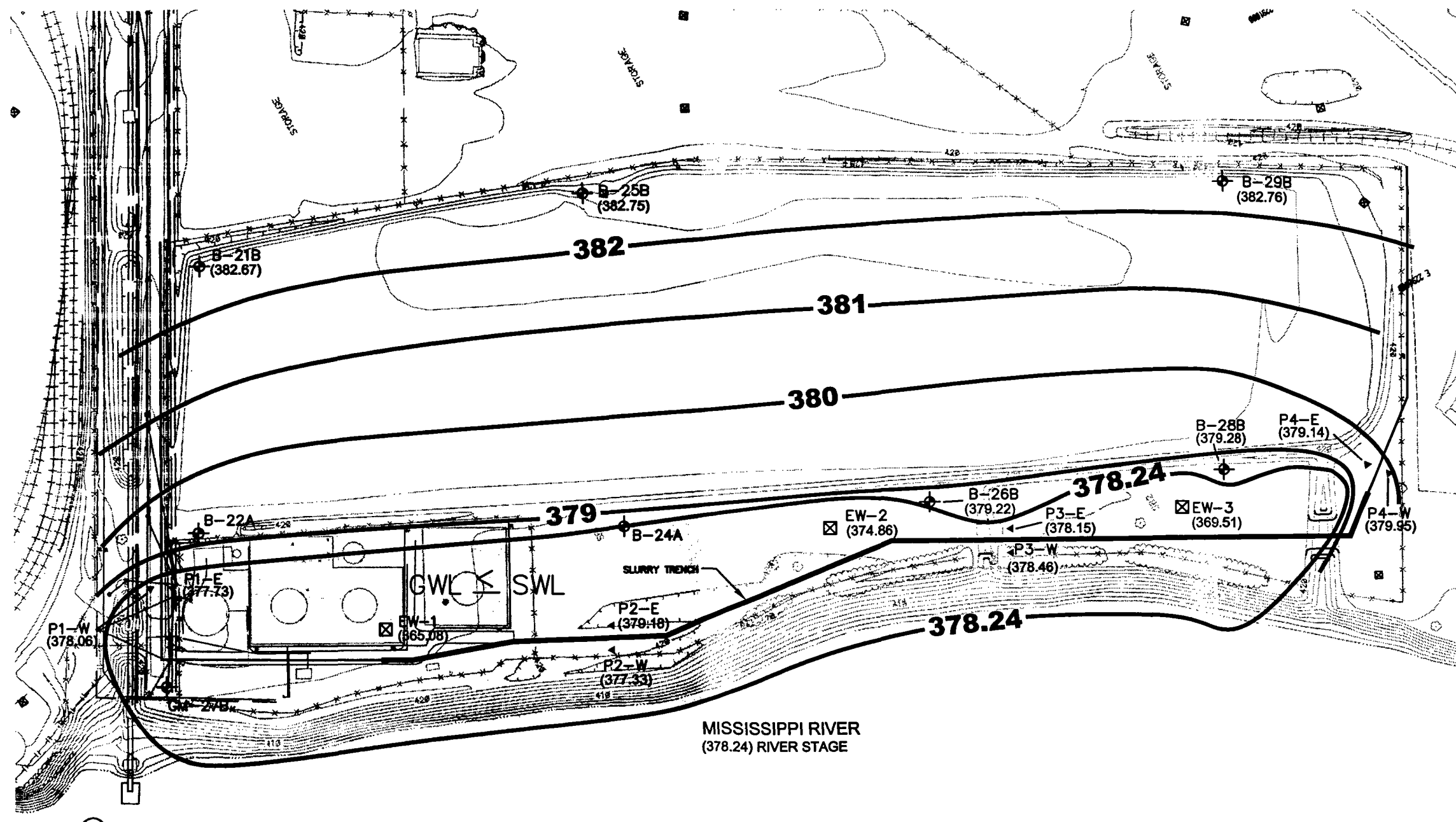
— TRENCH WALL ALIGNMENT

— HYDRAULIC TROUGH

GWL ≤ SWL GWL = GROUNDWATER LEVEL, SWL = SURFACE WATER LEVEL



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**LEGEND**

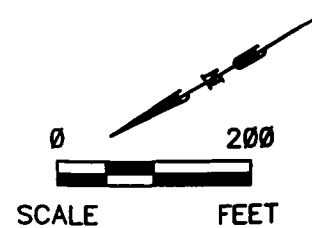
—379— GROUNDWATER CONTOUR LINE (1FT INTERVAL)  
(379) GROUNDWATER ELEVATION


— COMPLETED SLURRY TRENCH

— TRENCH WALL ALIGNMENT

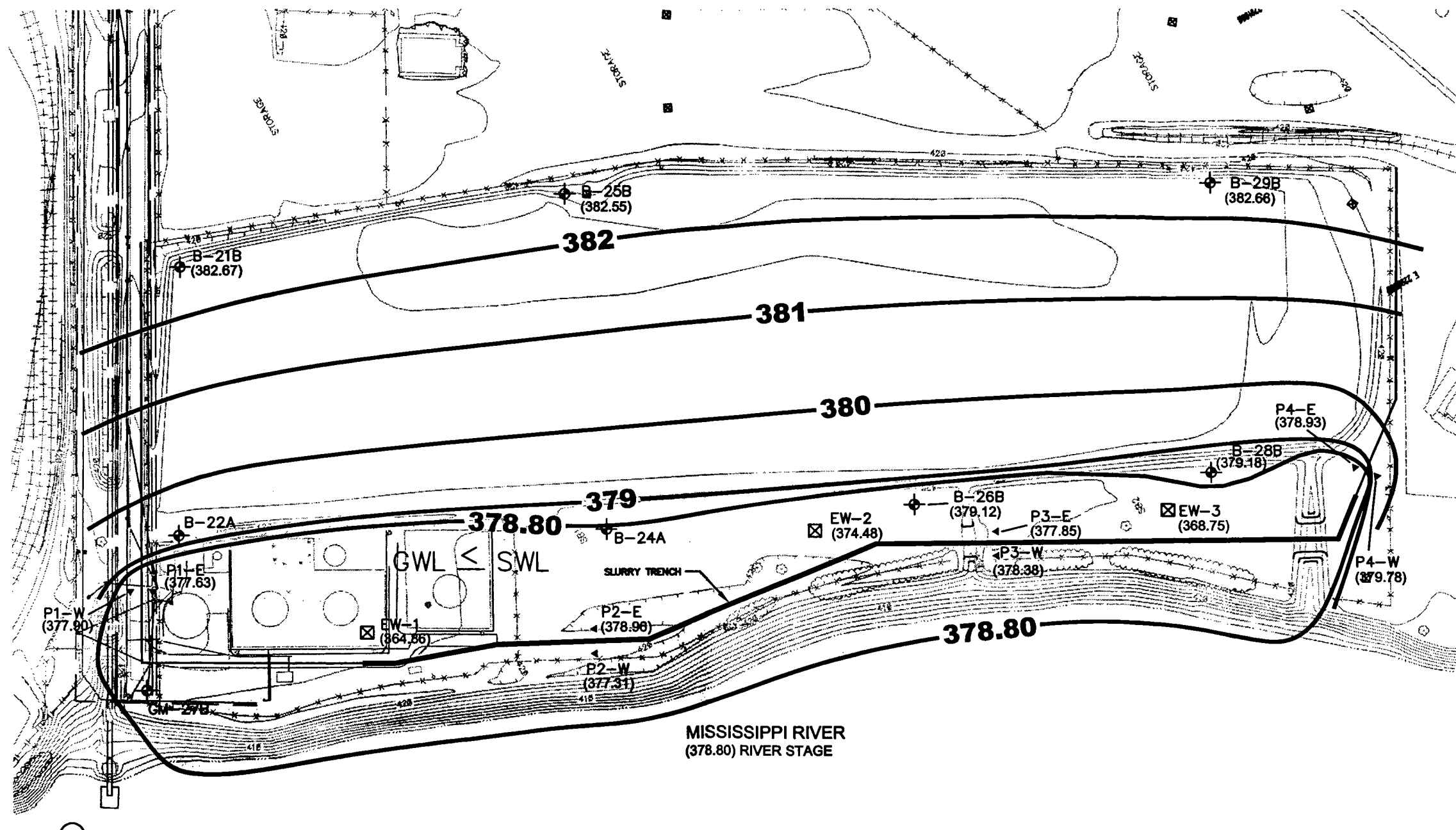
— HYDRAULIC TROUGH

GWL ≤ SWL GWL = GROUNDWATER LEVEL, SWL = SURFACE WATER LEVEL



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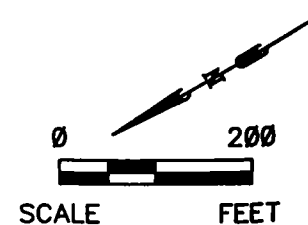
— **379** — GROUNDWATER CONTOUR LINE (1FT INTERVAL)  
 (379) GROUNDWATER ELEVATION

— COMPLETED SLURRY TRENCH

— TRENCH WALL ALIGNMENT

— HYDRAULIC TROUGH

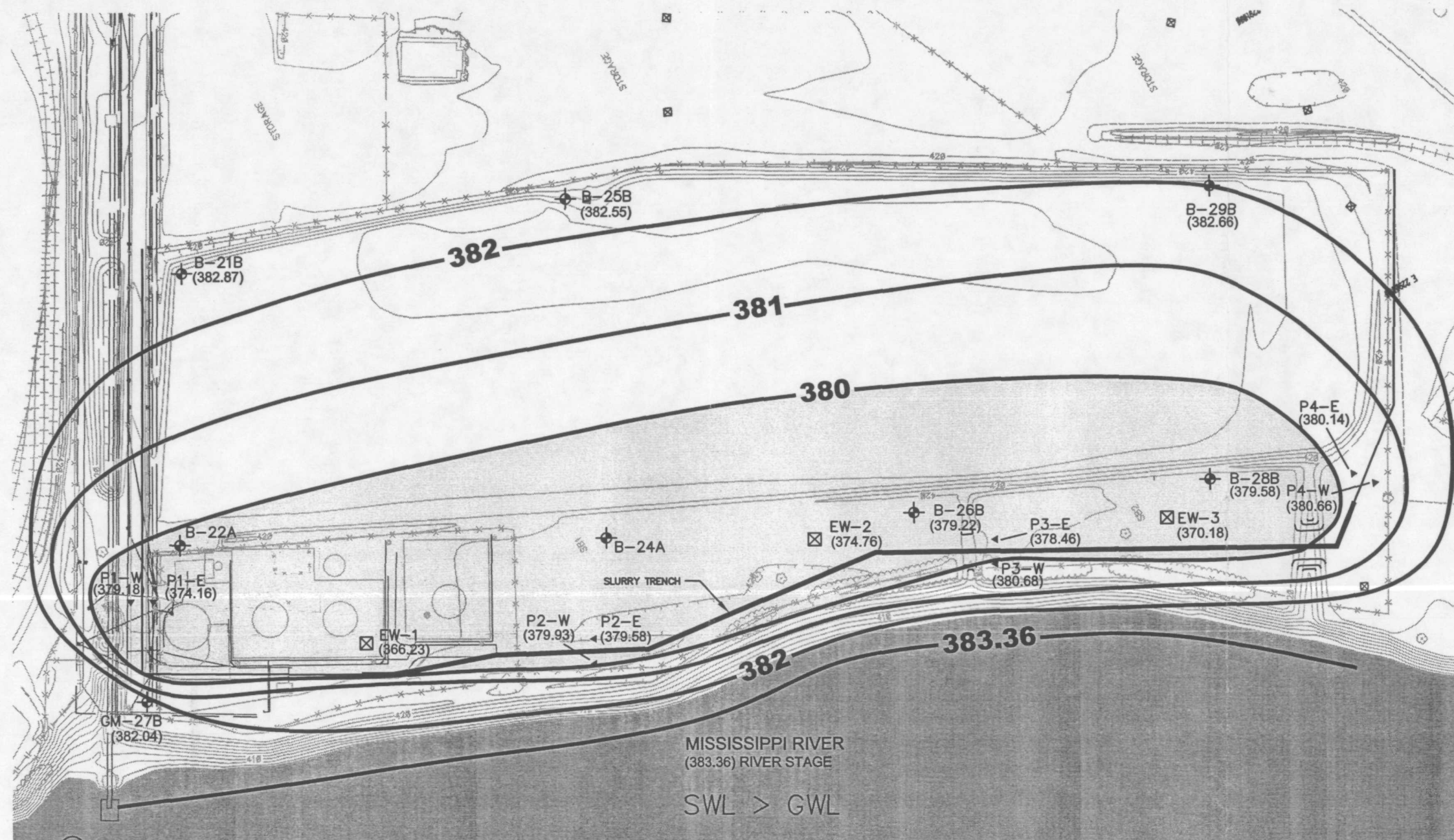
GWL ≤ SWL    GWL = GROUNDWATER LEVEL, SWL = SURFACE WATER LEVEL



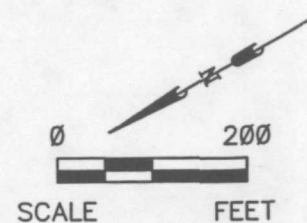
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GROUNDWATER MIGRATION CONTROL SYSTEM SITE-R SAUGET, ILLINOIS	PROJECT NO.
Groundwater Elevation February 20, 2004	FIG. NO. 6



- LEGEND**
- 379 — GROUNDWATER CONTOUR LINE (1FT INTERVAL)
  - (379) GROUNDWATER ELEVATION
  - COMPLETED SLURRY TRENCH
  - TRENCH WALL ALIGNMENT
  - HYDRAULIC TROUGH
  - SWL > GWL
  - GWL = GROUNDWATER LEVEL, SWL = SURFACE WATER LEVEL

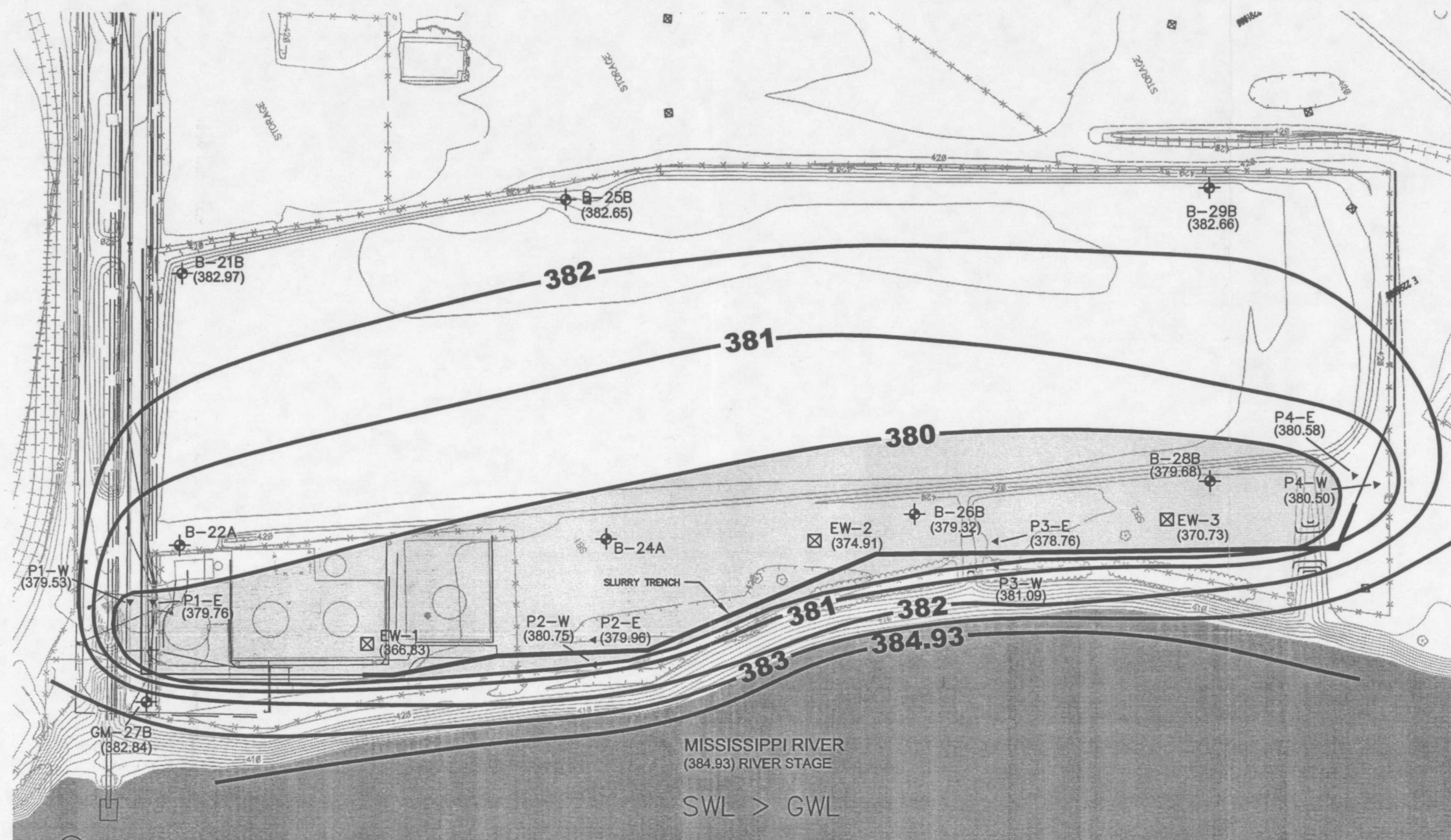


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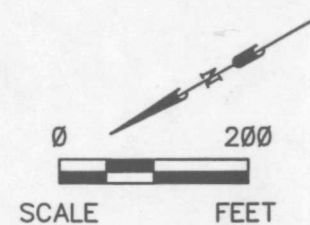
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GROUNDWATER MIGRATION CONTROL SYSTEM SITE-R SAUGET, ILLINOIS	PROJECT NO.
Groundwater Elevation February 23, 2004	FIG. NO. 7





- LEGEND**
- 379—** GROUNDWATER CONTOUR LINE (1FT INTERVAL)  
(379) GROUNDWATER ELEVATION
  - COMPLETED SLURRY TRENCH
  - TRENCH WALL ALIGNMENT
  - HYDRAULIC TROUGH
  - SWL > GWL
  - GWL = GROUNDWATER LEVEL, SWL = SURFACE WATER LEVEL

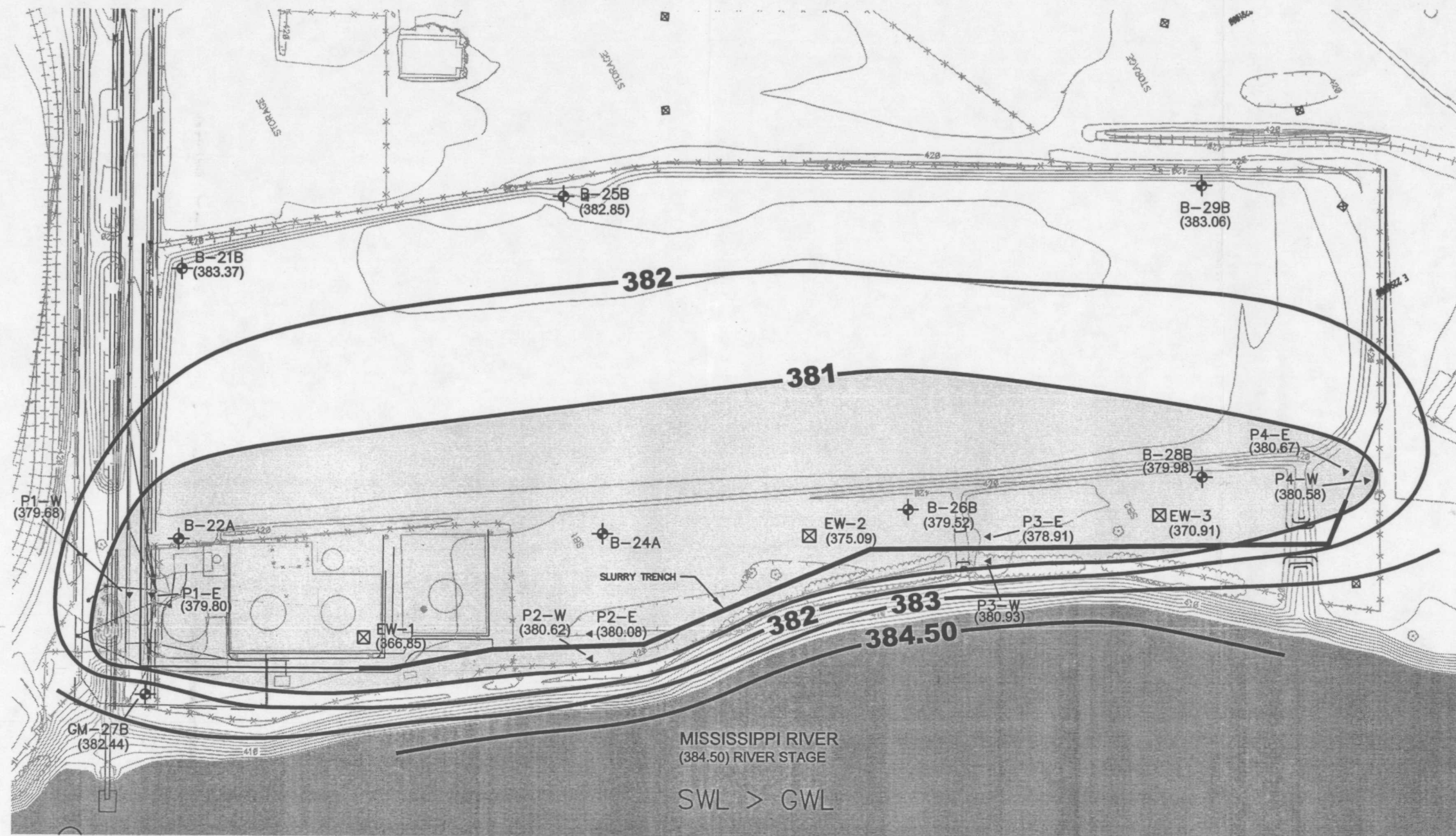


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GROUNDWATER MIGRATION CONTROL SYSTEM SITE-R SAUGET, ILLINOIS	PROJECT NO.
Groundwater Elevation February 24, 2004	FIG. NO. 8





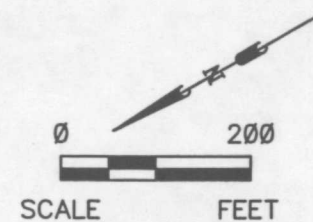
# LEGEND

—379— GROUNDWATER CONTOUR LINE (1FT INTERVAL)  
(379) GROUNDWATER ELEVATION

— COMPLETED SLURRY TRENCH  
— TRENCH WALL ALIGNMENT  
— HYDRAULIC TROUGH

SWL > GWL

GWL = GROUNDWATER LEVEL, SWL = SURFACE WATER LEVEL



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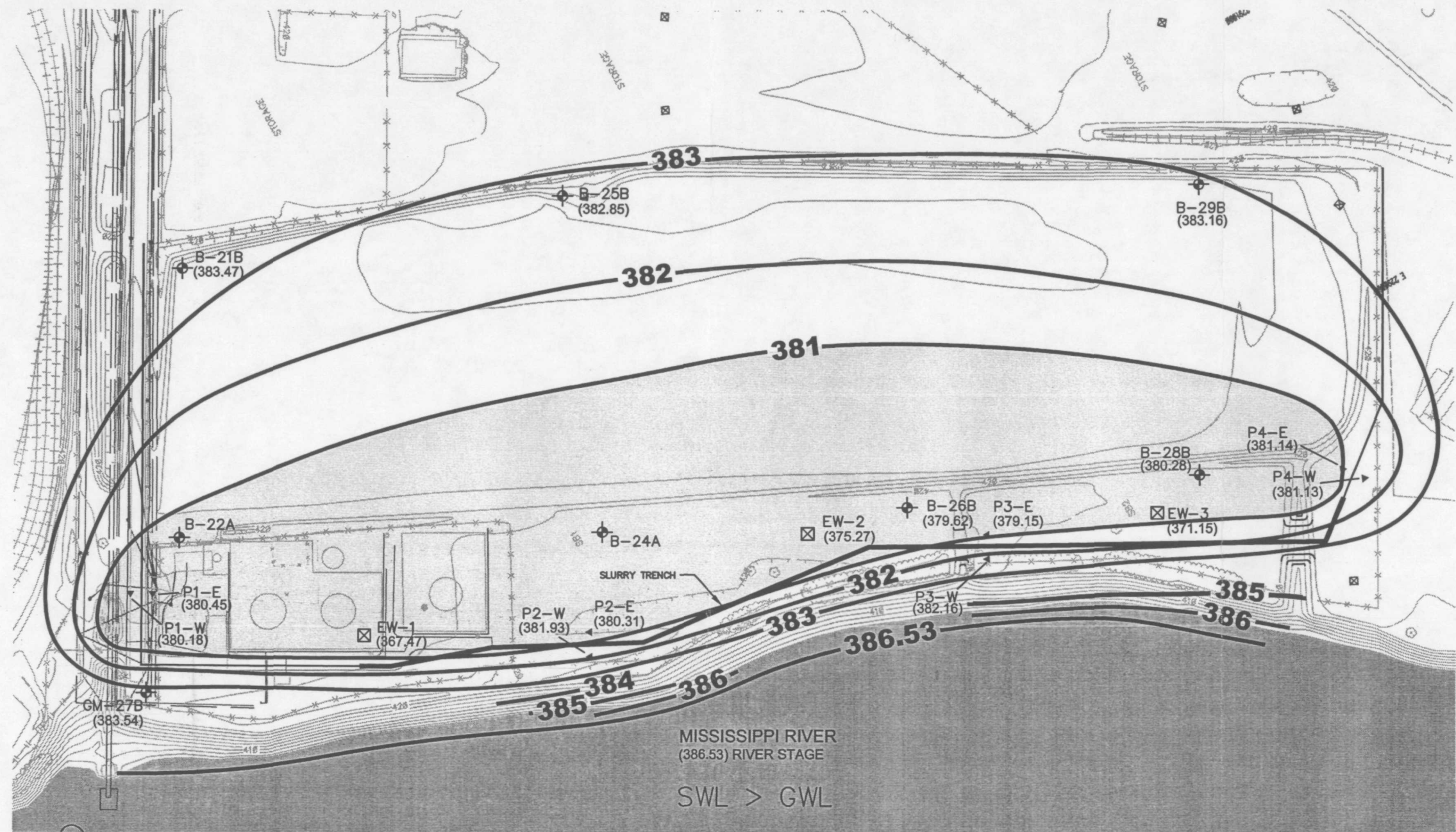
GROUNDWATER MIGRATION CONTROL SYSTEM  
SITE-R  
SAUGET, ILLINOIS

Groundwater Elevation  
February 25, 2004

PROJECT NO.

FIG. NO.  
9





**LEGEND**

**—379—** GROUNDWATER CONTOUR LINE (1FT INTERVAL)  
(379) GROUNDWATER ELEVATION

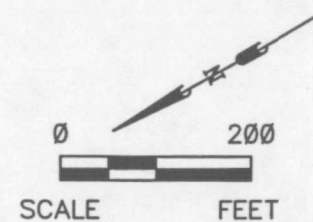
**—** COMPLETED SLURRY TRENCH

**—** TRENCH WALL ALIGNMENT

**—** HYDRAULIC TROUGH

**SWL > GWL**

GWL = GROUNDWATER LEVEL, SWL = SURFACE WATER LEVEL



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GROUNDWATER MIGRATION CONTROL SYSTEM SITE-R SAUGET, ILLINOIS	PROJECT NO.
Groundwater Elevation February 26, 2004	FIG. NO. 10